

### **Amendments to the Claims**

This listing of claims will replace the originally filed claims in the application.

#### **Listing of Claims:**

Claims 1 – 16 (cancelled)

Claim 17 (new):        A method for producing carbon monoxide and/or hydrogen and/or a mixture of hydrogen and carbon monoxide by cryogenic distillation, comprising the steps of:

- a)        producing a feed mixture comprising at least carbon monoxide and hydrogen in a production apparatus;
- b)        separating the feed mixture comprising at least carbon monoxide and hydrogen by cryogenic distillation in a separating unit (CB) comprising at least one column;
- c)        collecting carbon monoxide and/or hydrogen and/or a mixture of hydrogen and carbon monoxide from the separating unit;
- d)        in a first operating mode, sending a first quantity of feed mixture to be separated to the separating unit;
- e)        in the first operating mode, producing a quantity of end product that may be carbon monoxide, hydrogen or a mixture thereof;
- f)        in a second operating mode, sending a second quantity of feed mixture to be separated from the production apparatus to the separating unit, a smaller quantity than the quantity sent in the first operating mode;
- g)        in the second operating mode, producing a quantity of end product a smaller quantity than the quantity produced during the first operating mode;
- h)        in the second operating mode, drawing off from the separating unit at least one recycle gas containing carbon monoxide and/or hydrogen and/or methane and having a different composition from the composition of the feed mixture sent to the separating unit in the first operating mode, and sending at least one recycle gas to the separating unit to be separated therein and;
- i)        in the second operating mode, modifying the flow rate and composition of the feed mixture produced by the production apparatus, according to the flow rate and composition of the at least one recycle gas.

**Claim 18 (new):** The method as claimed in claim 17, in which the feed mixture contains up to 10 mol% of methane and/or up to 10 mol% of nitrogen and/or up to 10 mol% of other impurities.

**Claim 19 (new):** The method as claimed in claim 17, in which one (the) recycle gas contains at least 5 mol% of carbon monoxide.

**Claim 20 (new):** The method as claimed in claim 17, in which one (the) recycle gas contains at least 25 mol% of hydrogen.

**Claim 21 (new):** The method as claimed in claim 17, in which at least one recycle gas is recycled only during the second operating mode when the need of one of the products falls below a threshold.

**Claim 22 (new):** The method as claimed in claim 17, in which the composition and/or flow rate of the feed mixture produced by the production apparatus is modified during the second operating mode so that the carbon monoxide content of the second quantity of feed mixture decreases if the recycle gas is richer in carbon monoxide than the first quantity of feed mixture and/or so that the carbon monoxide content of the second quantity of feed mixture increases if the recycle gas is less rich in carbon monoxide than the first quantity of feed mixture.

**Claim 23 (new):** The method as claimed in claim 17, in which the composition of the feed mixture produced by the production apparatus is modified during the second operating mode so that the hydrogen content of the second quantity of feed mixture decreases if the recycle gas is richer in hydrogen than the first quantity of feed mixture and/or so that the hydrogen content of the second quantity of feed mixture increases if the recycle gas is less rich in hydrogen than the first quantity of feed mixture.

**Claim 24 (new):** The method as claimed in claim 17, in which the composition and/or flow rate of the feed mixture produced by the production apparatus is modified during the second operating mode so that the flow rate of the feed mixture entering the separating unit does not differ by more than 50% from the flow rate sent during the first mode.

**Claim 25 (new):** The method as claimed in claim 17, in which the composition and/or flow rate of the feed mixture produced by the production apparatus is modified

during the second operating mode so that the carbon monoxide content of the feed mixture entering the separating unit does not differ by  $\pm 5\%$  from the carbon monoxide content of the feed mixture entering the separating unit (CB) sent during the first mode.

**Claim 26 (new):** The method as claimed in claim 17, in which the composition and/or flow rate of the feed mixture produced by the production apparatus is modified during the second operating mode so that the hydrogen content of the feed mixture entering the separating unit (CB) does not differ by  $\pm 10\%$  from the hydrogen content of the feed mixture entering the separating unit sent during the first mode.

**Claim 27 (new):** The method as claimed in claim 17, in which the composition and/or flow rate of the feed mixture produced by the production apparatus is modified during the second operating mode by modifying the operation of the production apparatus.

**Claim 28 (new):** The method as claimed in claim 27, in which the operation of the production apparatus is modified by the following means:

- a) by varying the ratio of carbon vapor in the feed to the production apparatus if the production apparatus comprises a steam methane reformer (SMR) and/or
- b) by varying the operating temperature of at least one component of the apparatus, optionally the reaction temperature of the reformer (SMR) and/or
- c) by varying the flow rate of recycled carbon dioxide from a carbon dioxide stripper (MDEA) to a reformer (SMR) and/or
- d) by varying the flow rate feeding the production apparatus and/or
- e) by varying the oxygen/carbon ratio of the feed to the production apparatus (if the production apparatus operates by partial oxidation).

**Claim 29 (new):** An installation for producing hydrogen and/or carbon monoxide and/or a mixture of hydrogen and carbon monoxide, by separation, by cryogenic distillation, of a feed mixture containing at least carbon monoxide and hydrogen, comprising a production apparatus for producing the feed mixture, means for sending the feed mixture to a separating unit (CB), means for collecting hydrogen and/or carbon monoxide and/or a mixture of both, drawn off as product(s) from the separating unit, means for drawing off at least one recycle gas from the separating unit, means for

sending the recycle gas upstream of the separating unit to be separated with the feed mixture issuing from the production apparatus, and means for modifying the flow rate and composition of the feed mixture by modifying the operation of the production apparatus according to the flow rate and composition of at least one recycle gas.

Claim 30 (new):        The installation as claimed in claim 29, comprising means for detecting the composition and flow rate of the at least one recycle gas and of the feed mixture.

Claim 31 (new):        The installation as claimed in claim 29, comprising means for initiating the recycling of the at least one recycle gas if the need of product falls below a threshold, and means for stopping the recycling of the at least one recycle gas if the need of the same product increases above a (the) threshold.

Claim 32 (new):        An installation as claimed in claim 29, in which the separating unit (CB) contains a methane scrubbing column and/or a nitrogen scrubbing column and/or a carbon monoxide scrubbing column and/or a stripping column and/or a distillation column.